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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/590,044	06/08/2000	Joseph M. Jacobson	109026-0068	1282

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EXAMINER

BEREZNY, NEAL

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 05/08/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/590,044

Applicant(s)

JACOBSON ET AL.

Examiner

Neal Berezny

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 14-25, 29 and 30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 26-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Examiner acknowledges applicant's election, without traverse, of the Group I & VI inventions, drawn to a method of making a Chemical FET and the generic claims. Applicant has incorrectly asserted that all claims are readable on the elected species except claim 17. In fact, upon closer examination, it appears that claims 14-21 are drawn to an SET (single electron device), claims 24-25 are drawn to a chemical altering device, claim 29 is drawn to a MEM, and claim 30 to a microfluid device, none of which are chemical FET devices, nor are any generic to all the other species. In summary, claims 1-13, and 26-28 are under consideration, while claims 14-25, and 29-30, are drawn to non-elected inventions and will not be considered.

### ***Specification***

2. The disclosure is objected to because of the following informalities:

A. On page 13, line 22, it appears that the phrase " single nanoparticle 310", should be instead "330".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 7 and 28 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The steps of forming a transistor are critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). The parent claims describe a structure, which is not sufficient to enable one of ordinary skill in the art to build a transistor with out undue experimentation. The structure claimed does not include all or most of the parts of a transistor and requires one to speculate on how one should actually build the transistor given the claimed structure.

Claims 9-11 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is not clear how either the first and/or the second batch of particles become surrounded with bio-material and then deposited on the layer, when both batches were already deposited earlier in the process.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-13, and 26-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In both claims 1 and 26, the claims refer to "selected electrical characteristics" and "associating the deposited nanoparticles with". It is not clear which electrical characteristics one is to select, nor how one is to determine that an electrical characteristic was selected. Further, the term "associating"

employs a nebulous mental step, whereas the claims are required to recite and articulate definitive steps and structure in the process.

### **Request for Information**

Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

- A. Alivisatos, "Electrical Studies of Semiconductor-Nanocrystal Colloids," MRS Bulletin, Feb. 1998, at 18-23.
- B. Murray et al., J. Am. Chem. Soc. 115:8706 (1993)),
- C. Steigerwald et al., J. Am. Chem. Soc. 110:3046 (1988))
- D. Jarvis et al., Mat. Res. Soc. Symp. Proc. 272:229 (1992)).
- E. Keller et al., Anal. Biochem. 170:441 (1988)).
- F. Heath et al., J. Phys. Chem. B 101:189 (1997).
- G. Dabbousi et al., Chem. of Mafis. 6:216 (1994).

These references were cited in applicant's specifications.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

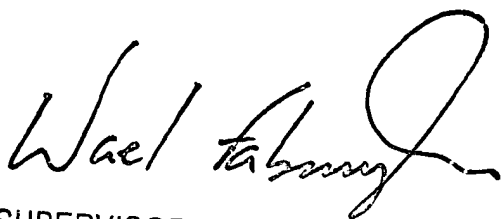
Claims 1-13, and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heller et al. (5,605,662) in combination with Yu et al. (6,303,943) and Bott et al. (3,865,550). Heller builds an array of bioelectronic device, associating the biomaterial, such as DNA and protein, with an electrical measurement affected by biomaterial attached to the surface, employing self-assembly, see abstract and fig.6. Heller does not appear to teach the use of nanoparticles with biomaterial shells, nor the use of semiconductors, conductors, and insulators for making a transistor, nor the use of multiple batches of particles for different layers, nor the step on sintering the particles. Yu teaches the use of nanoparticles with biomaterial shells, col.19, ln.65 – col.20, ln.8, the use of semiconductors, conductors, and insulators for making a transistor, see fig. 1. Bott teaches the step on sintering the particles, col.2, ln.35-39. It would be obvious to combine Yu and Bott with Heller to make the chemical detector of Heller into a chemical FET by using the chemically based FET structure and process of Yu to increase the efficiency of the chemical detector. It would be obvious to one of ordinary skill in the art at the time of the invention to use the sintering process of Bott to improve the conductivity of the material and reduce resistance.

### **CONCLUSION**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Neal Berezny whose telephone number is (703) 305-1481. The examiner can normally be reached on Monday to Friday from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached at (703) 308-4918. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
SUPERVISORY PRIMARY EXAMINER  
TECHNOLOGY CENTER 2800

Neal Berezny  
Patent Examiner  
Art Unit 2823